

LYCOSID SPIDERS OF JAPAN II. THE GENUS *TROCHOSA* C.L. KOCH

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Synopsis

TANAKA, Hozumi (Biological Laboratory, Konko Yao Senior High School, Yao, Osaka, 581 Japan): Lycosid spiders of Japan II. The genus *Trochosa* C.L. KOCH. *Acta arachnol.*, 36: 93-113 (1988).

The following 7 Japanese species of the genus *Trochosa* are dealt with: *Trochosa terricola* THORELL, *T. ruricola* (De GEER), *T. aquatica* TANAKA, *T. robusta* (SIMON), *T. spinipalpis* (F. CAMBRIDGE), *T. joshidana* (KISHIDA), and *T. vulvella* (STRAND). Among them, 5 species are herein redescribed in detail with notes on their biology and a key to them is provided. But the two species, *T. joshidana* and *T. vulvella*, are excluded from the redescrptions, because I have been unable to examine them until now.

KARSCH (1879) described *Lycosa lacernata*, but it was synonymized with *Trochosa ruricola* by myself (1980). Although STRAND (1907) described *Tarentula vulvella*, YAGINUMA (1970) put this species in *Trochosa*. KISHIDA (1909) described *Lycosa joshidana*, but this species is put in *Trochosa* in this paper. Four species known in Europe were added to the Japanese fauna by STRAND (1909), SAITO (1941) and YAGINUMA (1957). Afterward, TANAKA (1985) added one species as new to science.

Ultimately, 7 species are included in Japanese fauna.

Acknowledgements. I wish to express my hearty thanks to Dr. S. MORIUTI for his continuous encouragement in this study and for preparing the present descriptions, and to Prof. T. YAGINUMA for his valuable advice and guidance, and for allowing me to examine his personal collection. Furthermore, I am also indebted to Mr. A. FUKUSHIMA, Dr. M. GRASSHOFF, Dr. T. KRONESTEDT, Mrs. M. MATSUDA, Mr. S. MATSUMOTO, Mr. S. MIZUSAWA, Prof. Y. NISHIKAWA, Mr. S. NISHIKI, Mr. J. SAGARA, Mr. H. SAITO, Mr. Y. SUGANAMI, Dr. M. SUWA, Mr. B. TAKEI, Dr. Y. TARUMI, Dr. N. TSURUSAKI, Mr. N. YASUDA, and Mr.

H. YOSHIDA for the loan of the material.

Genus *Trochosa* C.L. KOCH

Trochosa C.L. KOCH, 1848, p. 95; SIMON, 1864, p. 345; KEYSERLING, 1877, p. 610; SIMON, 1898, pp. 318, 347; BÖSENBERG, 1901, p. 18; —, 1903, p. 398; DAHL, 1908, pp. 201, 267; SAVORY, 1926, p. 133; F. and M. DAHL, 1927, p. 53; PETRUNKEVITCH, 1928, p. 250; ROEWER, 1928, p. 129; SAVORY, 1935, p. 80; SIMON, 1937, p. 1089; KASTON, 1948, p. 329; LOCKET and MILLIDGE, 1951, p. 278; ROEWER, 1959, p. 746; BONNET, 1959, p. 4698; WIEBES, 1959, p. 18; YAGINUMA, 1960, p. 87; FUHN and NICULESCU BURLACU, 1971, p. 221; TYSTSCHENKO, 1971, p. 179; LOCKET, MILLIDGE and MERRETT, 1974, p. 37; TIKADER and MALHOTRA, 1980, p. 435; YAGINUMA, 1986, p. 166. Type-species: *Aranea ruricola* De GEER, 1778.

Trochosina SIMON, 1885, p. 10; —, 1898, pp. 337, 348; ROEWER, 1954, p. 302. Type-species: *Trochosa terricola* THORELL, 1856.

Varacosa CHAMBERLIN and IVIE, 1942, p. 36; ROEWER, 1954, p. 304. Type-species: *Trochosa avara* KEYSERLING, 1877.

Allotrochosina ROEWER, 1954, p. 213; BRADY, 1979, p. 168. Type-species: *Lycosa maung-anuiensis* BERLAND, 1925.

Diahogna ROEWER, 1954, p. 239; BRADY, 1979, p. 168. Type-species: *Lycosa martensii* KARSCH, 1878.

Trochosoma ROEWER, 1954, p. 304; BRADY, 1979, p. 168. Type-species: *Trochosa annulipes* L. KOCH, 1875.

Large spiders. Carapace with a pair of longitudinal bars. Head not elevated. AER straight or slightly procurved and equal to, or shorter than, PMR; AME larger than ALE. Clypeus shorter than the diameter of AME. Chelicerae with two or three teeth on retromargin; fang without excrescence in female. Legs with two spines at prolateral apex or femur I. Palp with one claw or none in male.

Biological notes: The spiders are found in the small hollows under stones or in the crevices of the fields. The egg asc is globular and whitish yellow.

Remarks: This genus is allied to *Lycosa*, from which it may be separated by the absence of the trichobothrium on the dorsal base of the tarsi I. The male of this genus is easily distinguished by the presence or absence of palpal claw and cheliceral excrescence, and the difference of the color of the tarsi I. In the female, it is very difficult to separate them, but they can be scarcely distinguished by the marginal lines of the genital openings of the epigynum.

The species of this genus are widely distributed in the world, and the

following seven species are represented in Japan.

Key to Japanese species*

1. Female..... 2
- Male..... 6
2. Epigynum with the helmet-shaped hoods which are round at apex (Figs. 2, 6, 17) 3
- Epigynum with the helmet-shaped hoods which are acute at apex (Fig. 10)..
..... *aquatica*
3. Epigynum with genital openings, of which the marginal lines are diverging downward (Figs. 1, 16)..... 4
- Epigynum with genital openings, of which the marginal lines are converging downward (Figs. 5, 13)..... 5
4. AER almost equal to PME..... *terricola*
- AER distinctly shorter than PME *spinipalpis*
5. AER equal to PME *ruricola*
- AER slightly shorter than PME..... *robusta*
6. Cheliceral fang with an excrescence on the outer margin 7
- Cheliceral fang without such an excrescence 8
7. Tibiae, metatarsi and tarsi I dark brown *ruricola*
- Tibiae, metatarsi and tarsi I yellowish brown *aquatica*
8. Palpal tarsi with claw *robusta*
- Palpal tarsi without claw..... 9
9. Ventral sides of palpal tibiae with spines..... *spinipalpis*
- Ventral sides of palpal tibiae without spines *terricola*

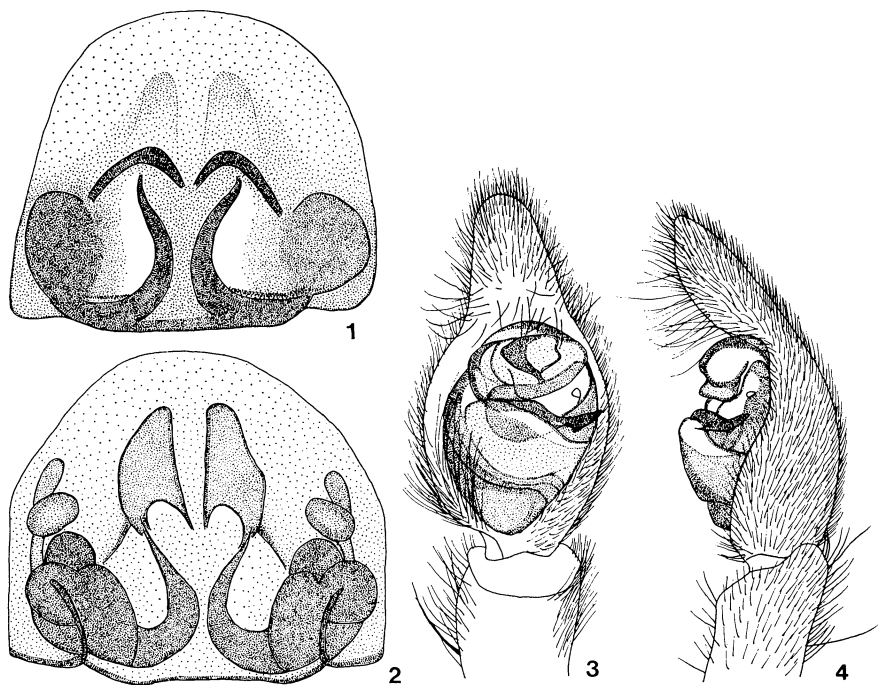
***Trochosa terricola* THORELL, 1856**

[Japanese name: Karafuto-komorigumo]

(Figs. 1-4)

Trochosa terricola THORELL, 1856, p. 161; BÖSENBERG, 1903, p. 399, pl. 37, fig. 587; DAHL, 1908, p. 269, figs. 5, 27; F. and M. DAHL, 1927, pp. 56, 77, figs. 148-150; ROEWER, 1928, p. 130; PALMGREN, 1939, p. 63, figs. 99-100; LOCKET and MILLIDGE, 1951, p. 281, figs. 134 (c), 136 (c); CHRYSANTHUS, 1955, p. 518, fig. a; WIEBES, 1959, p. 23;

* The two species, *joshidana* and *vulvella*, are not included in the key, because the specimens are not available for study.



Figs. 1-4. *Trochosa terricola*. 1. Female epigynum (ventral view). 2. Female epigynum (dorsal view). 3. Male palp (ventral view). 4. Male palp (retro-lateral view).

YAGINUMA, 1960, p. 87, pl. 41, fig. 230; ENGELHARDT, 1964, p. 225; FUHN and NICULESCU-BURLACU, 1971, p. 231, fig. 113; TYSTSCHENKO, 1971, p. 180; YAGINUMA, 1977, p. 395; ZHU, 1983, p. 77; YAGINUMA, 1986, p. 166, fig. 91.

Lycosa terricola: WESTRING, 1861, p. 529; SIMON, 1876, p. 283; —, 1937, p. 1109, figs. 1738-1739; SAITO, 1941, p. 118, fig. 133; —, 1959, p. 54.

Trochosina terricola: SIMON, 1885, p. 10; —, 1898, p. 348; ROEWER, 1954, p. 302; —, 1959, p. 906.

Female

Specimen measured: Sibuto, Nagano Prefecture, 27. VIII. 1971 (K. KATSURA).

Measurements (mm). Total length 10.60. Carapace length 5.60, width 3.90. Abdomen length 5.20, width 3.70.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 3.50 | 4.50 | 2.40 | 1.40 | 11.80 |
| II | 3.20 | 4.00 | 2.30 | 1.40 | 10.90 |
| III | 3.00 | 3.60 | 2.50 | 1.30 | 10.40 |
| IV | 3.80 | 5.00 | 4.00 | 1.90 | 14.70 |
| Palp | 2.00 | 2.00 | — | 1.50 | 5.50 |

Carapace dark yellowish brown, with light yellow median and lateral bands; two indistinct dark brown bars present in light yellow median band. AER almost straight; AER almost equal to PMR; AME separated from each other and from ALE by less than the radius of AME. Clypeus brown, almost as high as the diameter of ALE. Chelicerae reddish brown, with three teeth on retromargin. Maxillae yellowish brown. Labium reddish brown. Sternum yellowish brown, especially light yellow on central part. Abdomen yellowish brown in dorsal and lateral sides, with dark grey markings; a lanceolate median mark indistinct; venter yellowish brown. Legs and palpi light yellowish brown, without annulations. Epigynum with genital openings, of which the marginal lines are diverging downward, and transversely elongated septum at base (Fig. 1); spermathecae robust as in Fig. 2.

Male

Specimen measured: Utsukushi-gahara, Nagano Prefecture, 6. V. 1961 (Y. HIRASHIMA).

Measurements (mm). Total length 9.20. Carapace length 4.70, width 3.60. Abdomen length 4.50, width 2.90.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 3.10 | 4.00 | 2.60 | 1.50 | 11.20 |
| II | 2.80 | 3.40 | 2.10 | 1.30 | 9.60 |
| III | 2.50 | 2.90 | 2.30 | 1.20 | 8.90 |
| IV | 3.30 | 3.90 | 3.50 | 1.50 | 12.20 |
| Palp | 1.80 | 1.50 | — | 1.50 | 4.80 |

Similar to the female, but different in the following features: Carapace reddish brown, with no median and lateral band; two dark brown bars indistinct. Chelicerae dark reddish brown; fang without excrescence. Labium reddish brown. A lanceolate median mark distinct. Legs dark reddish brown on tibiae, metatarsi and tarsi I, and reddish brown on others; all legs with annulations. Palpi yellowish brown; tarsal organs (Figs. 3, 4) with a robust transverse median apophysis which is angular in outline, and have a ventro-

basally directed process; embolus coiled at tip; tarsus with no claw.

Variation: Total length ♀ 8.80–10.60, ♂ 8.20–10.00. Carapace length ♀ 4.40–5.60, ♂ 4.20–5.10; width ♀ 3.40–3.90, ♂ 3.20–3.70. Abdomen length ♀ 4.40–5.20, ♂ 4.00–4.90; width ♀ 3.00–3.80, ♂ 2.50–2.90. The color varies from light yellowish brown to reddish brown. Chelicerae rarely with two teeth on retromargin. In some individuals, femora I–IV with very faint annulations.

Material examined: Hokkaido—1♀, Kobuka, Rebun Is., 17. VII. 1971 (H. TANAKA); 1♀, 1♂, Rishiri Is., 28. VII. 1956 (O. SATO); 1♂, Higashi-ibe, 18. IV. 1983 (M. MATSUDA); 1♀, Daisetsuzan, 23. VIII. 1983 (M. MATSUDA); 1♀, Rausu, 6. VIII. 1956 (O. SATO); 1♀, Tomakomai, 15. VII. 1983 (N. TSURUSAKI); Honshu—1♀, Todo Is., Aomori Pref., 30. VII. 1961 (T. AKIYAMA); 1♂, Fujioka-cho, Tochigi Pref., 23. X. 1977 (H. SAITO); 1♀, 1♂, Shibu-toge, Nagano Pref., 27. VIII. 1971 (K. KATSURA); 1♂, Utsukushigahara, Nagano Pref., 6. V. 1961 (Y. HIRASHIMA).

Distribution: Japan (Hokkaido and Honshu); widely distributed in the Holarctic region.

Biological notes: Matures are found in May, July and August. The form of the egg sac, and the period of its formation are unknown.

Remarks: This species is very closely allied to *T. ruricola* (De Geer) from the Palaearctic region. The discriminating characters are noted in the remarks of the latter species.

***Trochosa ruricola* (De Geer, 1778)**

[Japanese name: Araitō-komorigumo]

(Figs. 5–8)

Aranea ruricola De Geer, 1778, p. 282, pl. 11, figs. 13–14, pl. 17, figs. 1–2.

Lycosa ruricola: HAHN, 1831, p. 103, fig. 77; WESTRING, 1861, p. 526; SIMON, 1876, p. 284; —, 1937, pp. 1109, 1112, 1136–1137, figs. 1736–1737; SAITO, 1941, p. 117; —, 1959, p. 56.

Trochosa ruricola: C.L. KOCH, 1851, p. 33; THORELL, 1856, p. 101; BÖSENBERG, 1903, p. 399, pl. 37, fig. 586; DAHL, 1908, pp. 263, 270, 277, fig. 24; F. and M. DAHL, 1927, p. 54, figs. 142–144; ROEWER, 1928, p. 130; PALMGREN, 1939, p. 62, figs. 93–96; LOCKET and MILLIDGE, 1951, p. 279, figs. 134 (A, F), 136 (A); ROEWER, 1954, p. 304; CHRYSANTHUS, 1955, p. 518, fig. c; ROEWER, 1959, p. 746; WIEBES, 1959, p. 21, figs. 20–21, 44, 57; WANG and ZHU, 1963, p. 435; ENGELHARDT, 1964, p. 225; FUHN and NICULESCU-BURLACU, 1971, p. 226, fig. 111; TYSTSCHENKO, 1971, p. 180, fig. 521;

- YAGINUMA, 1977, p. 395; PAIK and NAMKUNG, 1979, p. 69, fig. 55; TANAKA, 1980, p. 48, figs. 1-2; Compiling team for "Spiders from Farmland", 1980, p. 170, fig. 93; J. WANG, 1981, p. 122, fig. 62; ZHU, 1983, p. 36; HU, 1984, p. 251; PAIK and KIM, 1985, p. 69; YAGINUMA, 1986, p. 166, fig. 91.
- Lycosa lacernata* KARSCH, 1879, p. 100; SAITO, 1941, p. 100, fig. 113; BONNET, 1957, p. 2648; YAGINUMA, 1970, p. 666; —, 1977, p. 393.
- Tarentula lacernata*: BÖSENBERG and STRAND, 1906, p. 322.
- Trochosula lacernata*: ROEWER, 1954, p. 304.
- Alopecosa lacernata*: ROEWER, 1959, p. 859.

Female

Specimen measured: Wakamiya, Aomori Prefecture, 24. IX. 1977 (Y. NISHIKAWA).

Measurements (mm). Total length 11.60. Carapace length 5.60, width 4.10. Abdomen length 6.00, width 3.40.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 3.90 | 5.00 | 2.50 | 1.80 | 13.20 |
| II | 3.40 | 4.50 | 2.50 | 1.80 | 12.20 |
| III | 3.40 | 4.10 | 2.90 | 1.70 | 12.10 |
| IV | 4.40 | 5.60 | 4.80 | 2.00 | 16.80 |
| Palp | 2.10 | 2.30 | — | 1.60 | 6.00 |

Carapace dark brown, with light yellow median and lateral bands; two dark brown bars in light yellow median band distinct. AER almost straight; AER equal to PMR; AME separated from each other by about 1/3 times of the diameter of AME, and from ALE by less than the radius of ALE. Clypeus dark grey, smaller than the diameter of AME. Chelicerae reddish brown, with three teeth on retromargin. Maxillae yellowish brown. Labium and sternum reddish brown. Abdomen yellowish brown, with dark grey markings; a lanceolate median mark distinct, marginated with brown line; lateral sides yellowish brown, with blackish grey markings; venter unicolorous, light yellowish brown. Legs light yellowish brown, with indistinct annulations from femora to tibiae I-IV. Palpi light yellowish brown. Epigynum with genital openings, of which the marginal lines are converging downward, and transversely elongated septum at base (Fig. 5); robust spermathecae present as in Fig. 6.

Male

Specimen measured: Wakamiya, Aomori Prefecture, 24. IX. 1977 (Y. NISHIKAWA).

Measurements (mm). Total length 9.20. Carapace length 4.70, width 3.60.

Abdomen length 4.50, width 2.90.

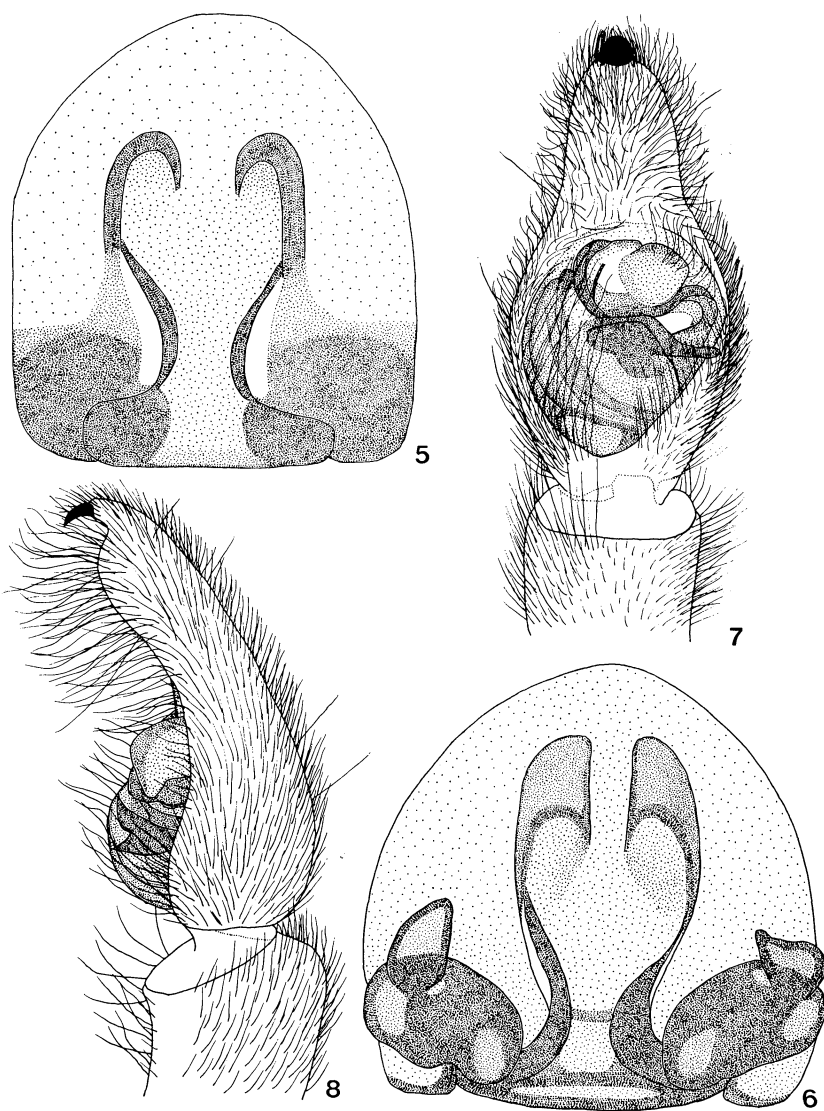
| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 3.20 | 4.20 | 2.30 | 1.70 | 11.40 |
| II | 3.00 | 3.80 | 2.00 | 1.60 | 10.40 |
| III | 2.80 | 3.40 | 2.40 | 1.40 | 10.00 |
| IV | 3.60 | 4.50 | 3.90 | 1.80 | 13.80 |
| Palp | 1.80 | 2.00 | — | 1.40 | 5.20 |

Similar to the female, but different in the following features: Carapace dark reddish brown, with light yellow median and lateral bands, which are covered with white pubescence. Clypeus dark brown. Fang of chelicera with a small excrescence on outside. Sternum dark yellowish brown. Ventral surface of abdomen greyish brown, with some patches. Legs yellowish brown, and dark reddish brown on tibiae, metatarsi and tarsi I; femora with indistinct annulations on all legs. Palpi yellowish brown on tarsus; tarsal organs (Figs. 7,8) with a robust transverse median apophysis which has a stout prominence toward the inner side; tip of embolus straight; tarsus with one claw.

Variation: Total length ♀ 10.30–15.10, ♂ 7.70–10.40. Carapace length ♀ 4.80–7.30, ♂ 4.10–5.30; width ♀ 3.70–5.40, ♂ 3.10–3.80. Abdomen length ♀ 5.50–8.50, ♂ 3.60–5.10; width ♀ 3.40–6.30, ♂ 2.30–3.40. The color varies from light yellowish brown to dark brown. Chelicerae rarely with two teeth on retromargin. In some individuals, AER slightly procurved and shorter than PMR.

Material examined: Hokkaido—1♂, Okushiri Is., Okushiri, 5. VII. 1981 (T. SATO); 1♀, Sounkyo, 8–9. VII. 1971 (H. TANAKA); 2♀, same locality, V. 1979 (N. YASUDA); 3♀, Kamikawa, 10. VII. 1971 (H. TANAKA); 1♀, 2♂, Koshiji, 8. V. 1978 (N. YASUDA); 2♀, Toun, 27. V. 1979 (N. YASUDA); 1♂, Higashi-ibe, 5. IV. 1981 (M. MATSUDA); 1♀, Jozankei, 10. VII. 1972 (H. TANAKA); 8♀, Sapporo, 16. IV. 1974 (M. SUWA); 1♀, 4♂, same locality, 10. X. 1982 (N. TSURUSAKI); 1♀, Onuma-koyen, 11. VII. 1973 (H. TANAKA); Honshu—2♀, 4♂, Wakamiya, Aomori Pref., 24. IX. 1977 (Y. NISHIKAWA); 1♀, Kawase, Aomori Pref., 12. X. 1974 (Y. TAKAHASHI); 1♀, Kita-akita-gun, Akita Pref., 7. XI. 1963 (J. NAGAKI); 1♀, 1♂, Mukaihamma, Akita Pref., 11. VI. 1977 (A. FUKUSHIMA); 1♀, Kuzakai, Iwate Pref., 1. VIII. 1974 (F. KOMAI); 1♀, Akayu, Yamagata Pref., III. 1959 (S. NISHIKI); 3♀, same locality, Yamagata Pref., 20. XI. 1970 (H. YOSHIDA); 1♂, same locality, Yamagata Pref., 29. X. 1971 (H. YOSHIDA); 1♂, Uwa-machi, Yamagata Pref., 21. IX. 1972 (H. YOSHIDA); 1♀, Nishi-zao-city, Yamagata Pref., 24. VII. 1978 (H. YOSHIDA); 1♀, 1♂, Kisagata, Niigata Pref., 22. X. 1967 (S.

KATAOKA); 1♀, Yahiko-mura, Niigata Pref., 20. IV. 1973 (S. MIZUSAWA); 1♂, Miyauchi-cho, Niigata Pref., 29. X. 1977 (S. MIZUSAWA); 2♀, 4♂, Saginosu, Niigata Pref., 4. V. 1978 (S. MIZUSAWA); 3♀, Kyokushin-cho, Niigata Pref.,



Figs. 5-8. *Trochosa ruricola*. 5. Female epigynum (ventral view). 6. Female epigynum (dorsal view). 7. Male palp (ventral view). 8. Male palp (retro-lateral view).

10. VII. 1978 (S. MIZUSAWA); 1♀, Miyauchi-cho, Niigata Pref., 8. X. 1978 (S. MIZUSAWA); 1♀, Yunotani-mura, Niigata Pref., 23. VIII. 1981 (H. TANAKA); 1♀, Kuzuu-cho, Tochigi Pref., 1. IV. 1977 (J. SAGARA); 1♀, Tatewariyama, Ibaraki Pref., 9. V. 1965 (Y. SUGANAMI); 1♂, Numata, Gunma Pref., 11. III. 1968 (B. TAKEI); 1♀, Maebashi-city, Gunma Pref., 26. IV. 1968 (S. MATSUMOTO); 1♀, Oze, Gunma Pref., 22. VII. 1984 (H. TANAKA); 1♂, Hiraiwa, Nagano Pref., 12-13. V. 1972 (Y. KUWANA); 3♀, Ina, Nagano Pref., 7. VII. 1972 (H. TANAKA); 1♀, same locality, Nagano Pref., 28. VI. 1973 (H. TANAKA); 1♀, Todai, Nagano Pref., 22-23. VII. 1972 (H. TANAKA); 2♀, Minotoguchi, Nagano Pref., 29. VI. 1973 (H. TANAKA); 1♀, Hirogahara, Nagano Pref., 9. VIII. 1964 (Y. TARUMI); 1♀, Sugadaira, Nagano Pref., 23. VIII. 1982 (N. TSURUSAKI); 1♀, Hidaka-cho, Saitama Pref., 1973 (Y. FUJII); 1♀, Miyama, Chiba Pref., 18. V. 1966 (S. MATSUMOTO); 1♀, Fuchu, Tokyo, 28. XI. 1955 (S. OKITSU); 1♂, Tokyo, 20. X. 1972 (M. OHNO); 1♂, Ohminesan, Nara Pref., 7. VI. 1970 (H. TANAKA); 1♂, Zenihara, Osaka Pref., 21. X. 1971 (Y. NISHIKAWA); 1♂, Yodogawa, Osaka Pref., 30. IV. 1973 (H. TANAKA); 1♀, Nakahara, Tottori Pref., 10. X. 1972 (T. ARITA); 2♀, Sanyo-cho, Okayama Pref., 24. VI. 1976 (T. MAEDA). Japan—1♀ (subadult) & 1♂ (adult) (Syntypes of *lacernata*, ZMB*-2730), no specific locality (F. HILGENDORF).

Distribution: Japan (Hokkaido and Honshu); widely distributed in the Palaearctic region.

Biological notes: Mature spiders are found from March to October. The formation of egg sacs is found from June to July. The number of eggs is from 80 to 180 in one egg sac.

Remarks: This species is very allied to *T. terricola* THORELL, occurring in the Holarctic region, but can be easily distinguished from it by the presence of a claw of tarsus of male palp and by the presence of a small excrescence on the outside of the fang of chelicera in male as indicated in the key.

***Trochosa aquatica* TANAKA, 1985**

[Japanese name: Nagazukin-komorigumo]

(Figs. 9-12)

Trochosa aquatica TANAKA, 1985, p. 54, figs. 5-8; YAGINUMA, 1986, p. 167; TANAKA, 1986, p. 17.

* ZMB: the Zoologisches Museum, Humboldt Universität, Berlin, East Germany.

Female

Specimen measured: The holotype.

Measurements (mm). Total length 5.60. Carapace length 2.90, width 2.20. Abdomen length 2.70, width 1.80.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 2.00 | 2.50 | 1.30 | 1.10 | 6.90 |
| II | 1.90 | 2.30 | 1.30 | 1.10 | 6.60 |
| III | 1.70 | 2.10 | 1.50 | 1.00 | 6.30 |
| IV | 2.40 | 2.90 | 2.50 | 1.20 | 9.00 |
| Palp | 1.10 | 1.00 | — | 0.70 | 2.80 |

Carapace dark brown, with light yellowish brown median and lateral bands; two dark brown bars in light yellowish brown median band distinct. AER almost straight; AER shorter than PMR; AME separated from each other by about half the diameter of AME, and from ALE by about the diameter of ALE. Clypeus dark brown, almost as high as the diameter of ALE. Chelicerae reddish brown, with three teeth on retromargin. Maxillae yellowish brown. Labium dark yellowish brown. Sternum light yellowish brown. Abdomen dark grey, with light yellowish brown markings; a lanceolate median mark distinct; lateral sides yellowish brown, with blackish grey markings; venter light yellowish brown. Legs reddish brown, with indistinct annulations of femora I-IV. Palpi uniformly reddish brown. Epigynum with genital openings, of which the marginal lines are converging downward and somewhat transversely elongated septum (Fig. 9); helmet-shaped hood very long and acute at tip as shown in Fig. 10.

Male

Specimen measured: One paratype taken at Satamisaki, Kagoshima Prefecture.

Measurements (mm). Total length 5.80. Carapace length 3.10, width 2.30. Abdomen length 2.70, width 1.70.

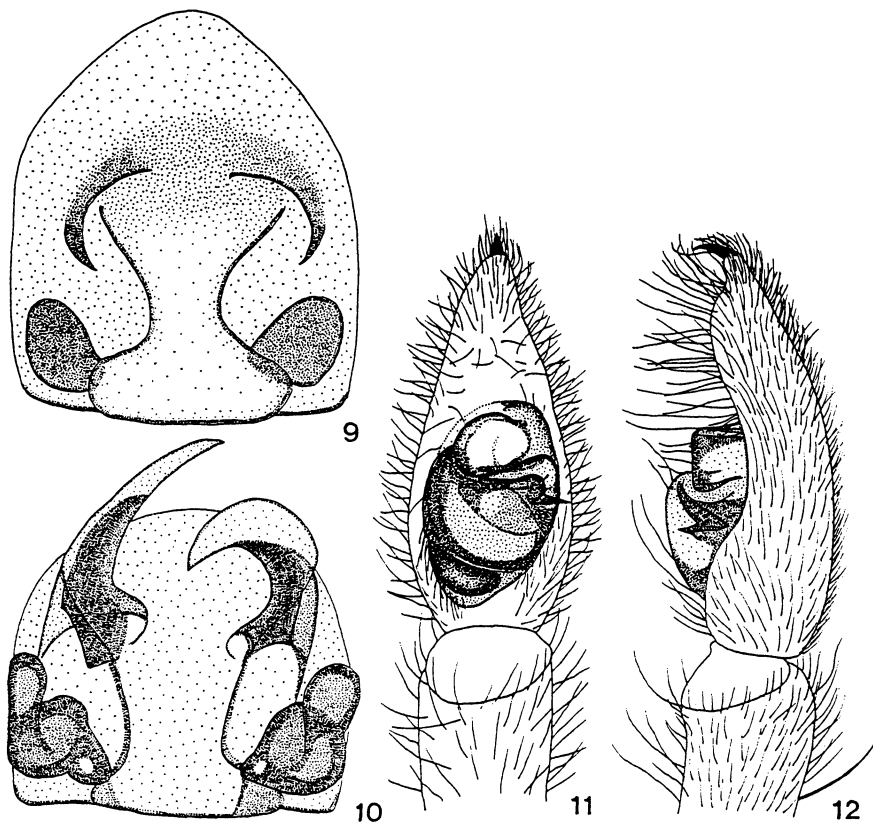
| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 2.50 | 3.10 | 1.90 | 1.50 | 9.00 |
| II | 2.20 | 2.70 | 1.70 | 1.40 | 8.00 |
| III | 2.20 | 2.50 | 1.90 | 1.10 | 7.70 |
| IV | 2.80 | 3.50 | 3.00 | 1.50 | 10.80 |
| Palp | 1.30 | 1.30 | — | 0.90 | 3.50 |

Differences from the female are as follows: Chelicera with a small excrescence on the outside of the fang. Labium and legs yellowish brown. Palpi

light yellowish brown; tarsal organs (Figs. 11, 12) with a transverse median apophysis which has a process toward under side; tip of embolus straight; tarsus with one claw.

Variation: Total length ♀5.60–9.00, ♂5.80–7.65. Carapace length ♀2.90–3.50, ♂3.10–4.10; width ♀2.20–2.50, ♂2.25–2.95. Abdomen length ♀2.70–5.50, ♂2.70–3.55; width ♀1.80–3.75, ♂1.60–2.25. The body color variation is from light yellowish brown to dark greyish brown.

Material examined: Honshu—1♀, Toshima, Izushichito, Tokyo, 18. VII. 1976 (S. HONJO); 1♀, 1♂, Sakai, Osaka Pref., 11. VII. 1970 (H. TANAKA); 1♀, same locality, 19. VIII. 1970 (H. TANAKA); Kyushu—1♀, (Holotype, UOP*), Satamisaki,



Figs. 9–12. *Trochosa aquatica*. 9. Female epigynum (ventral view). 10. Female epigynum (dorsal view). 11. Male palp (ventral view). 12. Male palp (retro-lateral view).

* UOP: the University of Osaka Prefecture, Sakai, Osaka, Japan.

Kagoshima Pref., 29. V. 1971 (H. TANAKA); 2♀ & 1♂ (Paratype), same data as holotype; 1♂ (Paratype), Odomari, Kagoshima Pref., 11. VII. 1976 (S. TSUKAGUCHI).

Distribution: Japan (Honshu and Kyushu).

Biological notes: This spider is found among the dead leaves in forest floors or in small depressions of paddy fields. Mature spiders are found from May to August. The egg is unknown.

Remarks: This species is very allied to the Chinese *T. chekiangensis*, but is easily distinguished from the latter by the presence of the very long and acute helmet-shaped hoods in the female epigynum.

Trochosa robusta (SIMON, 1876)

[Japanese name: Tairiku-komorigumo]

(Figs. 13-15)

Lycosa robusta SIMON, 1876, p. 286, pl. 9, fig. 4; —, 1937, pp. 1110, 1137, figs. 1742-1743.

Trochosa robusta CHYZER and KULCZYNSKI, 1891, p. 73, pl. 3, fig. 7; BÖSENBERG, 1903, p. 400, pl. 38, fig. 588; ROEWER, 1954, p. 299; CHRYSANTHUS, 1955, p. 518, fig. d; BONNET, 1959, p. 4707; WIEBES, 1959, p. 25, figs. 41, 58; FUHN and NICULESCU-BURLACU, 1971, p. 224; TYSTSCHENKO, 1971, p. 180; LOCKET, MILLIDGE and MERRETT, 1974, p. 37; YAGINUMA, 1977, p. 395.

Tarentula robusta: STRAND, 1909, p. 64.

Female

Specimen measured: Göttingen, West Germany, X. 1956 (HOMANN).

Measurements (mm). Total length 12.30. Carapace length 6.00, width 4.80. Abdomen length 6.30, width 4.30.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 4.00 | 4.80 | 2.40 | 1.70 | 12.90 |
| II | 3.60 | 4.50 | 2.40 | 1.60 | 12.10 |
| III | 3.50 | 3.90 | 2.70 | 1.60 | 11.70 |
| IV | 4.40 | 5.10 | 4.10 | 2.00 | 15.60 |
| Palp | 2.10 | 2.20 | — | 1.60 | 5.90 |

Carapace reddish brown, with light yellow median and lateral bands, two indistinct reddish brown bars present in light yellow median band. AER weakly recurved. AER slightly shorter than PMR; AME separated from each other and from ALE by about 1/4 times of the diameter of AME. Clypeus light

yellowish brown, shorter than the diameter of AME. Chelicerae dark reddish brown; with three teeth on retromargin. Maxillae and labium reddish brown. Sternum yellowish brown. Abdomen dark yellowish brown, with dark grey markings; a lanceolate median mark distinct; lateral sides yellowish brown; venter light yellowish brown. Legs and palpi yellowish brown, except for reddish brown tarsi of legs I-II. Epigynum with genital openings, of which the marginal lines are converging downward, and transversely elongated septum at base (Fig. 13).

Male

Specimen measured: Göttingen, West Germany, III. 1961 (HOMANN).

Measurements (mm). Total length 9.90. Carapace length 5.30, width 3.90. Abdomen length 4.60, width 2.90.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 3.70 | 4.70 | 2.70 | 2.00 | 13.10 |
| II | 3.50 | 4.40 | 2.50 | 1.70 | 12.10 |
| III | 3.40 | 4.00 | 2.80 | 1.60 | 11.80 |
| IV | 4.30 | 4.60 | 5.40 | 2.10 | 16.40 |
| Palp | 1.50 | 1.80 | — | 1.60 | 4.90 |

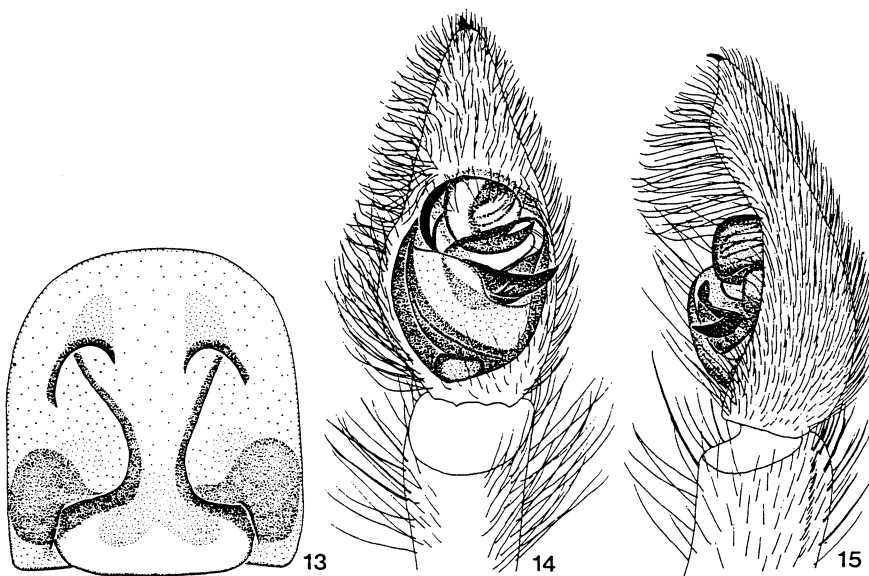
Similar to the female, but different in the following features: AER almost straight. Chelicerae reddish brown; fang without excrescence. Maxillae and labium yellowish brown. Legs yellowish brown, except for reddish brown metatarsi and tarsi of legs I. Palpi: tarsal organs (Figs. 14, 15) with a robust transverse median apophysis which has a stout prominence toward the inner side; embolus coiled at tip; tarsus with one claw.

Material examined: 2♀ (SMF*-20420/2), Göttingen, West Germany, X. 1956 (HOMANN); 1♂ (SMF-20419/1), same locality, III. 1961 (HOMANN).

Distribution: Japan (Honshu) and Europe.

Remarks: Although STRAND (1909) recorded this European species from Japan, I have not been able to examine the Japanese specimens. The specimens of the West Germany were used for the description of this species. This species is allied to other species of the genus, but can be easily distinguished from them by presence of the male palpal claw and absence of the excrescence on the outside of the fang in male. I retain this species in the Japanese list until the Japanese specimen may be studied.

* SMF: the Senckenberg Museum, Frankfurt/Main, West Germany.



Figs. 13-15. *Trochosa robusta*. 13. Female epigynum (ventral view). 14. Male palp (ventral view). 15. Male palp (retrolateral view).

***Trochosa spinipalpis* (F. CAMBRIDGE, 1895)**

[Japanese name: Togeude-komorigumo]

(Figs. 16-19)

Lycosa spinipalpis F. CAMBRIDGE, 1895, p. 28, pl. 3, figs. 4-5, 9, 11, 14; SIMON, 1937, p. 1109, figs. 1740-1741.

Trochosa spinipalpis: KULCZYNSKI, 1898, p. 104; DAHL, 1908, pp. 269, 280, fig. 26; F. and M. DAHL, 1927, p. 55, figs. 145; PALMGREN, 1939, p. 65, figs. 97-98; LOCKET and MILLIDGE, 1951, p. 282, figs. 134D, 136D; ROEWER, 1954, p. 300; CHRYSANTHUS, 1955, p. 518, fig. b; YAGINUMA, 1957, p. 57; BONNET, 1959, p. 4712; WIEBES, 1959, p. 24, figs. 42, 56; YAGINUMA, 1960, pl. 41, fig. 229; —, 1970, p. 667; FUHN and NICULESCU-BURLACU, 1971, p. 229, fig. 112; TYSTSCHENKO, 1971, p. 180; LOCKET, MILLIDGE and MERRETT, 1974, p. 37; YAGINUMA, 1977, p. 395; —, 1986, p. 166, fig. 91.

Female

Specimen measured: Turku Käsämäki, Finland, 25. V.-30. VII. 1971 (I. OKSALA).

Measurements (mm). Total length 9.50. Carapace length 4.10, width 3.00. Abdomen length 5.40, width 3.70.

| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 2.50 | 3.00 | 1.50 | 1.20 | 8.20 |
| II | 2.30 | 2.80 | 1.60 | 1.10 | 7.80 |
| III | 2.30 | 2.40 | 1.80 | 1.20 | 7.70 |
| IV | 2.90 | 3.40 | 2.90 | 1.50 | 10.70 |
| Palp | 1.50 | 1.40 | — | 1.00 | 3.90 |

Carapace dark reddish brown, with light yellow brown median and lateral bands; two distinct dark reddish brown bars present in light yellow brown band. AER weakly procurved; AER distinctly shorter than PMR; AME separated from each other and from ALE by about 1/4 times the diameter of AME. Clypeus yellowish brown, about the radius of AME. Chelicerae dark reddish brown, with two teeth on retromargin. Maxillae reddish brown. Labium dark reddish brown. Sternum reddish yellow brown. Abdomen dark grey; a lanceolate median mark indistinct; lateral sides yellowish brown, with dark grey markings; venter greyish brown. Legs light yellowish brown on femora I-IV with indistinct annulations, and reddish brown on others. Palpi reddish brown. Epigynum with genital openings, of which the marginal lines are diverging downward, and transversely elongated septum at base (Fig. 16); finger-like spermathecae present as in Fig. 17.

Male

Specimen measured: Turku Käsämäki, Finland, 25. V.-30. VII. 1971 (I. OKSALA).

Measurements (mm). Total length 9.90. Carapace length 5.30, width 3.90. Abdomen length 4.60, width 2.90.

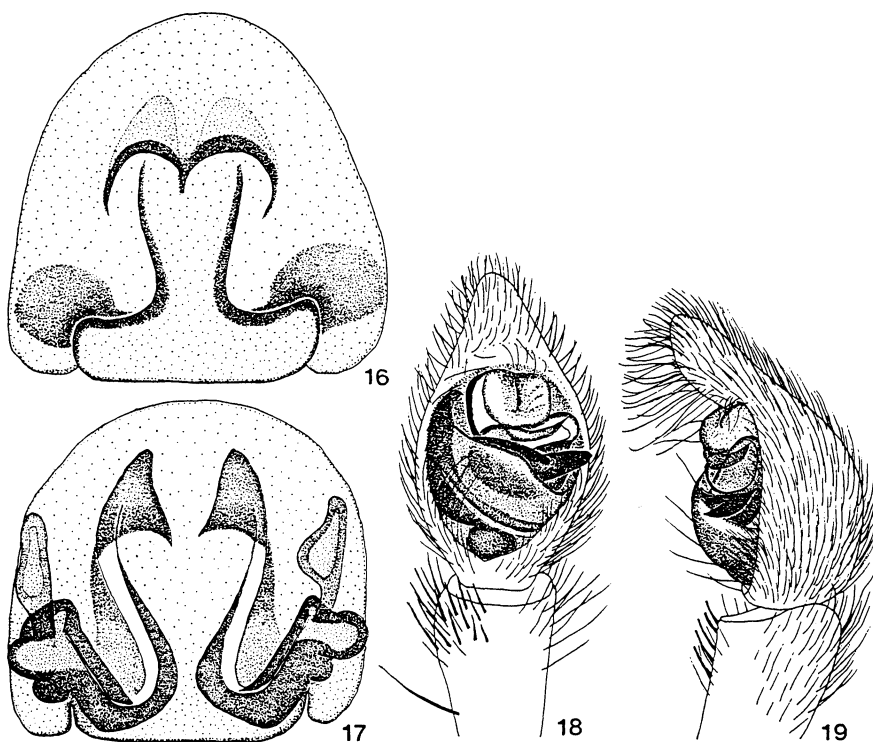
| Leg | Femur | Patella & tibia | Metatarsus | Tarsus | Total |
|------|-------|-----------------|------------|--------|-------|
| I | 2.50 | 3.00 | 1.60 | 1.40 | 8.50 |
| II | 2.30 | 2.70 | 1.60 | 1.20 | 7.80 |
| III | 2.20 | 2.40 | 1.90 | 1.10 | 7.60 |
| IV | 2.80 | 3.30 | 2.80 | 1.40 | 10.30 |
| Palp | 1.40 | 1.20 | — | 1.30 | 3.90 |

Characteristic features in the male: Fang of chelicera without excrescence. Labium and sternum yellowish brown. Abdomen lanceolate median mark absent. Legs I dark brown on tibiae, metatarsi and tarsi. Palpi with spines on ventral side of tibiae; talsal organs (Figs. 18, 19) with a robust transverse median apophysis which has a stout prominence toward the inner side; embolus coiled at tip; tarsus without claw.

Material examined: 1♀, 1♂, Turku Käsämäki, Finland, 25. V.-30. VII. 1971 (I. OKSALA).

Distribution: Japan (Hokkaido) and Europe.

Remarks: Although YAGINUMA (1957) recorded this species from Japan, until now I have been unable to find this spider from everywhere. The description of this species was made based on specimens of the Finland. This species is allied to the others of this genus, but is distinguished from them by the spines on ventral side of male palpal tibiae. The examination of Japanese species is expected.



Figs. 16-19. *Trochosa spinipalpis*. 16. Female epigynum (ventral view). 17. Female epigynum (dorsal view). 18. Male palp (ventral view). 19. Male palp (retrolateral view).

***Trochosa joshidana* (KISHIDA, 1909), n. comb.**

[Japanese name: Uzen-komorigumo]

Lycosa Joshidana KISHIDA, 1909, p. 100, figs. 1-3; SAITO, 1941, p. 99, fig. III.*Lycosa joshidana*. YAGINUMA, 1970, p. 666; —, 1977, p. 393.

Distribution: Japan (Honshu).

Remarks: The type-specimen of this Japanese species was lost. And afterward there is no collecting record. Judging from the figure given in the original description, I am fully convinced that *joshidana* should be transferred from *Lycosa* to *Trochosa*. KISHIDA illustrated that the carapace has a pair of longitudinal parallel bars in the median band. This is a good generic character of *Trochosa*.

***Trochosa vulvella* (STRAND, 1907)**

[Japanese name: Kita-komorigumo]

Tarentula vulvella STRAND, 1907, p. 565; —, 1909, p. 65, fig. 39.*Lycosa vulvella*: SAITO, 1941, p. 116; BONNET, 1959, p. 2669.*Metatrochosina vulvella*: ROEWER, 1954, p. 279.*Trochosa vulvella*: YAGINUMA, 1970, p. 667; —, 1977, p. 395.

Distribution: Japan (Honshu).

Remarks: The type-specimen of this Japanese species has been probably lost. In its original description and redescription, STRAND (1907 and 1909) pointed out that this species is similar to *T. ruricola* (De GEER) and *T. terricola* THORELL in the superficial appearance. From the ground, I treat it as belonging to *Trochosa*, as YAGINUMA (1970 and 1977) was already placed it in *Trochosa*.

摘 要

田中穂積 (私立金光八尾高等学校, 〒581 八尾市柏村町): 日本のコモリグモ II. *Trochosa* 属。
日本から得られた *Trochosa* 属に含まれる 7 種の再記載を行った。それらの種は以下のとおりである。

Trochosa terricola (カラフトコモリグモ), *T. ruricola* (アライトコモリグモ), *T. aquatica* (ナガズキンコモリグモ), *T. robusta* (タイリクコモリグモ), *T. spinipalpis* (トゲウデコモリグモ), *T. joshidana* (ウゼンコモリグモ), *T. vulvella* (キタコモリグモ)。

これら 7 種のうち, 2 種 (*T. joshidana* と *T. vulvella*) を除く 5 種について検索表をつけた。

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